

ABSTRACT

5  $\beta$ -isophorone is formed by isomerizing  $\alpha$ -  
isophorone in the presence of an isomerizing catalyst (an  
aliphatic C<sub>5-20</sub> polycarboxylic acid) in an isomerizing-  
reaction unit 1. The  $\beta$ -isophorone thus formed is oxidized  
with oxygen in an inert solvent in the presence of an  
oxidizing catalyst (a complex salt of a transition metal  
and an N,N'-disalicylidenediamine) in an oxidizing-  
10 reaction unit 2, thereby forming ketoisophorone. After  
removing a low-boiling point component, which is an  
impurity (non-conjugated cyclic ketone), from the reaction  
mixture using a distilling unit 3, a high-boiling component  
(oxidizing catalyst) is separated in a distilling unit 4,  
15 and then ketoisophorone is separated from the solvent in  
the separation unit 5. Thereafter, the solvent containing  
0 to 5,000 ppm (weight basis) of the impurities and  
substantially free from ketoisophorone is recycled to the  
oxidizing reaction through a recycling line 6. According  
20 to the present invention, the combination of the  
isomerizing reaction and the oxidizing reaction makes it  
possible to produce ketoisophorone from  $\alpha$ -isophorone while  
maintaining the activity of the oxidizing catalyst.